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ABSTRACT

In 1991, a study was conducted at Piedmont Virginia Community College (PVCC) to identify key trends and provide information regarding occupational/technical programs at PVCC, particularly with respect to student enrollment, student completion, and occupational opportunities for graduates. Major findings of the study included the following: (1) occupational/technical students constituted approximately one-third of all curricular students and full-time equivalent students enrolled at PVCC, with nearly one-third of these enrolled in the Business and Management program; (2) the next largest programs in terms of student enrollment were Nursing and Computer Information Systems; (3) though only 33.15% of PVCC's curricular students were enrolled in occupational/technical programs, 54.39% of all PVCC graduates received degrees in these fields; and (4) the growth rates and job opportunities in occupations for which PVCC occupational/technical programs prepare workers were quite high, with the projected occupational growth rates ranging from -1.1% for data entry operators to 76.1% for health record technologists. The major problem encountered while conducting the study involved student program classification within the computerized student database, which underscored the need for a monitoring system for program classification. (JMC)

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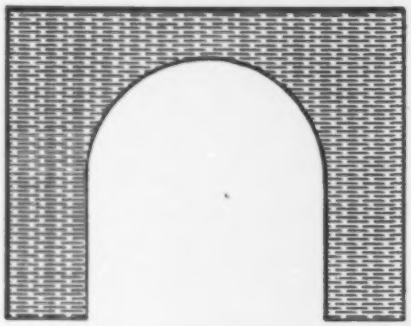

# Occupational/Technical Programs at Piedmont Virginia Community College

Office of Institutional
Research and Planning
Piedmont Virginia
Community College

Research Report
Number 3-91

June 1991

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June 1991

# PVCC Institutional Research Brief

## OCCUPATIONAL/TECHNICAL PROGRAMS AT PVCC

This brief highlights the findings in *Occupational/Technical Programs at Piedmont Virginia Community College* (PVCC Institutional Research Report No. 3-91, May 1991), a study designed to examine occupational/technical programs at Piedmont Virginia Community College (PVCC) with respect to student enrollment, student completion, and occupational opportunities for graduates. The study is intended to supplement the academic review process, as currently conducted at the college, and is to be used in conjunction with the annual graduate survey reports and employer survey reports published by the Office of Institutional Research and Planning.

Occupational/technical students typically constitute approximately one-third of all curricular students and FTES enrolled at PVCC.[1] Of these occupational/technical students, nearly one-third are enrolled in the Business and Management program. The next largest programs in terms of student enrollment are Nursing and Computer Information Systems. In terms of student completion, more than one-half of all graduates receive degrees in occupational/technical areas (see Figure 1). Occupational/technical students, in other words, are much more likely to complete their degrees or certificates than are college transfer students.

Measuring AAS programs during a three-year average period against Virginia's State Council of Higher Education for Virginia (SCHEV) productivity standards, three programs--Business and Management, Computer Information Systems, and Nursing--met both FTES enrollment and graduation standards. Three programs--Drafting and Design, Respiratory Therapy, and Science Laboratory Technology--met neither FTES enrollment nor graduation standards. Three programs--Office Systems Technology, Electronics, and Police Science--met graduation standards but did not meet FTES enrollment standards.[2]

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[1]One FTES, or full-time equivalent student, is generated for every 15 student credit hours.

[2]"Productivity standards require that programs have an average of . . . 7 or more A.A.S. degrees . . . The requirement for FTE majors is 2.5 times that for graduation" (SCHEV Proposal for Program To Be Initiated in 1992-1994 Biennium, Feb. 9, 1989). Eighteen FTES, then, are needed for each AAS program to meet the SCHEV requirement (2.5 times 7 graduates). Please note that the AAS program in Business and Management has three majors: Accounting, Management, and Marketing. Although these are referred to as majors in the college *Catalog*, they are really areas of specialization and not college majors.

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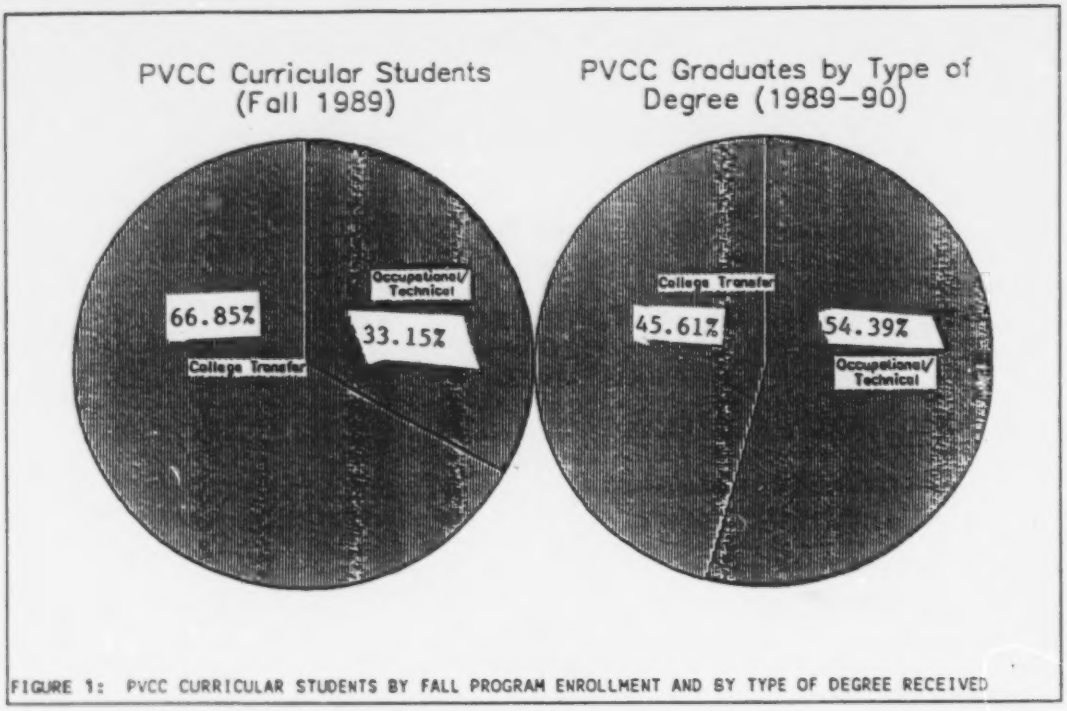


FIGURE 1: PVCC CURRICULAR STUDENTS BY FALL PROGRAM ENROLLMENT AND BY TYPE OF DEGREE RECEIVED

Generally, the growth rates for occupations for which PVCC occupational/technical programs prepare workers are quite high. Similarly, there seem to be ample job opportunities in occupations for which PVCC occupational/technical programs prepare workers.

The major problem encountered while conducting the study involved student program classification within the computerized student database. A number of students were classified as enrolled in certificate programs which have not been offered at PVCC for several years. Clearly, a monitoring system for program classification must be implemented. In these times of tight budgets and academic accountability, failing to do so could jeopardize the very future of a number of instructional programs at PVCC.

# OCCUPATIONAL/TECHNICAL PROGRAMS AT PIEDMONT VIRGINIA COMMUNITY COLLEGE

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Research Report No. 3-91

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# *OCCUPATIONAL/TECHNICAL PROGRAMS AT PIEDMONT VIRGINIA COMMUNITY COLLEGE*

## INTRODUCTION

Two years ago, the Office of Institutional Research and Planning at Piedmont Virginia Community College (PVCC) published a study on occupational/technical programs offered by the college. As noted in the introduction,

> The purpose of this study is to supplement the academic review process by examining PVCC's occupational/technical programs with respect to enrollment, completion, and occupational opportunities. Key trends in both the occupational/technical programs themselves and the professions in which programs graduates are employed are identified, and an attempt is made to apply various criteria by which the programs can be measured. When combined with the annual graduate survey reports and employer survey reports, this study provides a fairly detailed examination of occupational/technical programs and student outcomes.[1]

Three recommendations emerged from the study. First, it was recommended that "efforts . . . be intensified to ensure that students are correctly coded in the VCCS [Virginia Community College System] database with respect to the curriculum in which they are enrolled."[2] The second recommendation was that "a community needs assess-

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[1]Ronald B. Head, *Occupational/Technical Programs at Piedmont Virginia Community College* (PVCC Institutional Research Report No. 3-89, April 1989), p. 2.

[2]*Ibid.*, p. 21.

ment be conducted in the near future.[3] The third recommendation was that the entire academic review process be re-examined and improved.

All three recommendations were acted upon. PVCC's Office of Admissions and Records (A&R), in conjunction with the academic divisions of the college, took steps to insure that students were being correctly coded with respect to their degree programs. A community needs survey was distributed last month and will be analyzed this summer. A new academic program review process was adopted and implemented this year.

This present study is a follow-up of the 1989 study, designed to supplement the new academic review process and provide key trends and information concerning occupational/technical programs at PVCC.

## OCCUPATIONAL/TECHNICAL PROGRAMS AT PVCC

One of the primary missions of Piedmont Virginia Community College (PVCC) is to provide occupational/technical education for citizens within its service region. As defined in PVCC's mission statement,

> The occupational and technical education programs are designed to meet the increasing demand for technicians, semiprofessional workers, [and] skilled craftsmen for employment in industry, business, the professions, and government. The curricula are planned primarily to provide workers for the region served by the college.[4]

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[3] *Ibid.*, p. 21.

[4] *Piedmont Virginia Community College 1990-1992 Catalog*, p. 2.

Occupational/technical programs lead to an Associate of Applied Science (AAS) degree, a certificate, or a career studies certificate. Additionally, in the past, PVCC has offered occupational/technical programs leading toward diplomas. Presently, the college offers eight AAS programs, three certificate programs, and nine career studies certificate programs.

The eight AAS programs are (1) Business and Management (with majors in Accounting, General Management, General Management Specialization in Banking and Finance, General Management Specialization in Construction Management, Marketing, Marketing Specialization in Real Estate, and Marketing Specialization in Insurance), (2) Business and Office (with a major in Office Systems Technology), (3) Computer Information Systems (with specializations in Programming and Microcomputers for Business), (4) Electrical/Electronics Technology (with a major in Electronics Technology), (5) Mechanical Technology (with a major in Computer-Aided Drafting and Design), (6) Nursing, (7) Protective Services (with a major in Police Science), and (8) Respiratory Therapy. Two years ago, an AAS program in Science Laboratory Technology, was offered at PVCC but has since been discontinued.

The three certificate programs are (1) Automotive Technology, (2) Administration of Justice, and (3) Business and Office. Two years ago, a certificate program in Arts and Crafts was offered, but this has been changed to a Career Studies Certificate program. The certificate program in Automotive Technology was not offered two years ago and is not included in this study. Because the program is so new, no students have graduated, and only in Fall Semester 1990 were students classified as enrolled in Automotive Technology.

The nine career studies certificate programs are (1) Arts and Crafts Production, (2) Business and Management, (3) Business and Office, (4) Child Care, (5) Computer Information Systems, (6) Computer-Aided Drafting Technology, (7) Electronics Technology, (8) General Education, and (9) Industrial Mechanics. A career studies certificate program in Health Technology, offered two years ago and reported in the 1989 study, has been discontinued at PVCC.

As noted above, all instructional programs at PVCC, including occupational/technical programs, are subjected to a new academic program review process every five years. Academic program review is conducted through the Office of the Dean of Instruction and has been designed to insure that each program is thoroughly reviewed and that the results are used to improve the curriculum. The process includes a review of the program's goals and objectives, enrollment and graduate trends, cost analysis, skills and knowledge acquired from the program, student satisfaction, counseling and advising services, graduate placement, employer satisfaction with graduates, current and predicted employment opportunities, transfer rates to four-year colleges, faculty qualifications, primary teaching methods, curriculum review procedures, and student outcomes assessment.

## METHODOLOGY AND LIMITATIONS

Three major sources of data were used in conducting the study. Student enrollment data were collected from the VCCS Student Enrollment Booklets published electron-

ically each term by the VCCS. Student graduation data were collected from the VCCS Graduation Awards Conferred Booklets published electronically each year by the VCCS. Occupational data were collected from the eighth edition of *Guide to Occupations in Virginia* (formerly titled *Virginia Occupational Demand, Supply and Wage Information*, and referred to as *VODSWI)*.[5] The *Guide to Occupations in Virginia* is hereafter referred to as *GOV*.

Although this study provides a great deal of useful information for both academic administrators and teaching faculty in the occupational/technical areas, some of the limitations of the study should be noted.

First, and most importantly, the study is not meant to be a rigorous and authoritative evaluation of occupational/technical programs. Rather, the various evaluation criteria used in the study are intended to generate discussion of the strengths and weaknesses of the programs.

Second, although student enrollment and graduation data are authoritative in the sense that they are the sources used by the VCCS to monitor academic programs, student enrollment, and student program completion, in some cases they are neither valid nor reliable. For instance, PVCC has not offered a diploma in Drafting Design since the early 1980's, yet as late as Fall Semester 1989, one student was classified as enrolled in the diploma program for Drafting Design. The certificate program in Drafting is not currently offered by the college, yet as late as Fall Semester 1989 one student was classified as enrolled in the program.

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[5]Julia H. Martin *et al.*, *Guide to Occupations in Virginia, Virginia and Central and Northeast*, 8th edition (Charlottesville: Virginia Occupational Information System, Center for Public Service, March 1991).

This problem of coding students into programs no longer offered by PVCC is not limited to previous years. In Fall Semester 1990, two students were classified as enrolled in the certificate program in Electronics Servicing and one student was classified as enrolled in the certificate program in Health Technology. Both certificate programs were discontinued several years ago. The certificate program in Arts and Crafts Production was changed to a Career Studies Certificate, yet students are still being classified as enrolled in the Arts and Crafts Production certificate program.

Clearly, although efforts have been made to correctly classify students, problems still exist. Not only must students be correctly classified upon entry into an instructional program but their classification must be monitored on a regular basis. Without regular monitoring, a change from one curriculum to another will not be reflected in the VCCS student database, and in a worst case scenario, the State Council of Higher Education for Virginia (SCHEV) might recommend that a program be discontinued based upon erroneous data. Monitoring procedures used by A&R should be evaluated periodically, and data reported by A&R should be reviewed by academic administrators and faculty to ensure accuracy.

Another limitation of the study is that data for the career studies certificate are reported in aggregate form only and not by the nine different program areas. In this respect, it was impossible to compare enrollment and graduate data with occupational growth and job openings. Although internal codes are assigned for each career studies certificate program, these codes are not reflected in the VCCS Student Enrollment Booklets.

Still another limitation of the study is that occupational information is reported for Service Delivery Area 7 (SDA 7), which closely but not exclusively approximates PVCC's service region. The PVCC service region consists of the counties of Albemarle, Fluvanna, Greene, Louisa, and Nelson, the northern half of Buckingham County, and the city of Charlottesville. SDA 7 consists of the counties of Albemarle, Culpeper, Fauquier, Fluvanna, Greene, Louisa, Madison, Nelson, Orange, and Rappahannock, and the city of Charlottesville.

Finally, occupational data do not in all cases match program data as precisely as might be desired. For instance, while it is easy to relate the major in Accounting in the Business and Management program to the *GOV* category of *Accountant/Auditor*, it is less easy to relate the Arts and Crafts program to *GOV* categories. Although the Arts and Crafts program is not really designed to produce primarily commercial artists, designers, photographers, or performing artists, these were the most relevant *GOV* categories.

## STUDENT ENROLLMENT IN OCCUPATIONAL/TECHNICAL PROGRAMS

During any particular academic term, slightly more than one-third of all curricular students are enrolled in occupational/technical programs.[6] In terms of the number of students enrolled, programs and majors range from 1 or 2 to more than 200. The number of fall term students enrolled in occupational/technical programs during the past

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[6]The other two-thirds are enrolled in college transfer programs. College transfer programs are those leading to the Associate in Arts (AA) degree or Associate in Science (AS) degree. The purpose of these programs is "to prepare students for transfer to four-year baccalaureate programs" (PVCC *1990-1992 Catalog*, p. 25).

three years is presented in Table 1. As can be seen, nearly one-third of all occupational/technical students were enrolled in the Business and Management program. The next largest programs in terms of student enrollment were Nursing and Computer Information Systems. The three smallest programs were Arts and Crafts Production, Health Technology, and Science Laboratory Technology. All three of these programs, however, have been discontinued at PVCC.

TABLE 1: NUMBER OF PVCC FALL TERM STUDENTS BY OCCUPATIONAL/TECHNICAL PROGRAM

| ACADEMIC PROGRAM | Fall 1988 No. | Fall 1988 Pct. | Fall 1989 No. | Fall 1989 Pct. | Fall 1990 No. | Fall 1990 Pct. | AVERAGE No. | AVERAGE Pct. |
|---|---|---|---|---|---|---|---|---|
| Arts & Crafts (Cert.) | 2 | 0.3% | 3 | 0.4% | 2 | 0.3% | 2 | 0.3% |
| BUSINESS & MANAGEMENT | | | | | | | | |
| Accounting (AAS) | 72 | 9.1% | 64 | 9.1% | 67 | 9.7% | 68 | 9.3% |
| Management (AAS) | 163 | 20.6% | 139 | 19.7% | 133 | 19.3% | 145 | 19.9% |
| Marketing (AAS) | 41 | 5.2% | 33 | 4.7% | 29 | 4.2% | 34 | 4.7% |
| BUSINESS & OFFICE | | | | | | | | |
| Office Systems (AAS) | 42 | 5.3% | 49 | 7.0% | 50 | 7.2% | 47 | 6.4% |
| Clerical Studies (Cert.) | 2 | 0.3% | 5 | 0.7% | 5 | 0.7% | 4 | 0.5% |
| Computer Systems (AAS) | 118 | 14.9% | 109 | 15.5% | 118 | 17.1% | 115 | 15.8% |
| ELECTRONICS | | | | | | | | |
| Electronics (AAS) | 61 | 7.7% | 51 | 7.2% | 50 | 7.2% | 54 | 7.4% |
| Electronics (Cert.) | 4 | 0.5% | 0 | 0.0% | 2 | 0.3% | 2 | 0.3% |
| Health Technology (Cert.) | 2 | 0.3% | 4 | 0.6% | 1 | 0.1% | 2 | 0.3% |
| MECHANICAL TECHNOLOGY | | | | | | | | |
| Drafting & Design (AAS) | 27 | 3.4% | 28 | 4.0% | 27 | 3.9% | 27 | 3.8% |
| Drafting (Cert.) | 4 | 0.5% | 3 | 0.4% | 0 | 0.0% | 2 | 0.3% |
| Drafting Design (Diploma) | 5 | 0.6% | 1 | 0.1% | 0 | 0.0% | 2 | 0.3% |
| Nursing (AAS) | 140 | 17.7% | 118 | 16.8% | 122 | 17.7% | 127 | 17.4% |
| POLICE SCIENCE | | | | | | | | |
| Police Science (AAS) | 45 | 5.7% | 36 | 5.1% | 42 | 6.1% | 41 | 5.6% |
| Law Enforcement (Cert.) | 4 | 0.5% | 1 | 0.1% | 3 | 0.4% | 3 | 0.4% |
| Respiratory Therapy (AAS) | 10 | 1.3% | 19 | 2.7% | 17 | 2.5% | 15 | 2.1% |
| Science Laboratory (AAS) | 4 | 0.5% | 1 | 0.1% | 0 | 0.0% | 3 | 0.3% |
| CAREER STUDIES CERTIFICATE | 44 | 5.6% | 40 | 5.7% | 22 | 3.2% | 35 | 4.8% |
| TOTAL | 790 | 35.0% | 704 | 32.6% | 690 | 30.5% | 729 | 34.9% |

SOURCE: VCCS Student Enrollment Booklet, Table 6C. Percentages are by column except for the final row which is the percentage of occupational/technical students among all curricular students.

It should be noted that the figures in Table 1 refer to the number of students who were officially classified as majors in the various programs. The figures do not refer to the number of students taking classes in the various program areas. This is an important

distinction to bear in mind. For instance, during Fall Semester 1990, only five students were enrolled in the Arts and Crafts program yet 329 students took classes in Arts and Crafts.

Another way to review academic program enrollment is to examine the number of FTES reported for each program. One FTES, or full-time equivalent student, is generated for every 15 student credit hours. FTES enrollment is important for two reasons. First, institutional funding is based upon the number of annualized FTES. Secondly, one measure of academic program productivity used by SCHEV is to calculate the number of FTES enrolled in each associate degree program. According to SCHEV guidelines, an average of 18 FTES should be enrolled in an AAS program each year.[7]

Table 2 presents the number of fall term FTES enrolled in each occupational/technical program at PVCC during the past three years and indicates whether the AAS programs met the SCHEV standard. It should be noted that the FTES figures in Table 2 are generated from the credit hours of students officially classified as occupational/technical students and not from the credit hours of students taking classes in the occupational/technical areas. The distinction is important. For instance, the FTES generated by students taking classes in Arts and Crafts during Fall Semester 1990 was 73, yet the FTES generated by students officially enrolled in Arts and Crafts was only 2.

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[7] "Productivity standards require that programs have an average of . . . 7 or more A.A.S. degrees . . . The requirement for FTE majors is 2.5 times that for graduation" (SCHEV Proposal for Program To Be Initiated in 1992-1994 Biennium, Feb. 9, 1989). Eighteen FTES, then, are needed for each AAS program to meet the SCHEV requirement (2.5 times 7 graduates). Please note that the AAS program in Business and Management has three majors: Accounting, Management, and Marketing. Although these are referred to as majors in the college *Catalog*, they are really areas of specialization and not college majors.

TABLE 2: NUMBER OF PVCC FTES BY OCCUPATIONAL/TECHNICAL PROGRAM

| ACADEMIC PROGRAM | Fall 1988 No. | Fall 1988 Pct. | Fall 1988 Meets SCHEV Standard | Fall 1989 No. | Fall 1989 Pct. | Fall 1989 Meets SCHEV Standard | Fall 1990 No. | Fall 1990 Pct. | Fall 1990 Meets SCHEV Standard | AVERAGE No. | AVERAGE Pct. | AVERAGE Meets SCHEV Standard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arts & Crafts (Cert.) | 1 | 0.3% | N/A | 1 | 0.3% | N/A | 2 | 0.6% | N/A | 1 | 0.4% | N/A |
| BUSINESS & MANAGEMENT | | | Yes | | | Yes | | | Yes | | | Yes |
| Accounting (AAS) | 34 | 9.0% | | 31 | 8.7% | | 32 | 9.1% | | 32 | 8.9% | |
| Management (AAS) | 66 | 17.5% | | 61 | 17.1% | | 56 | 16.0% | | 61 | 16.8% | |
| Marketing (AAS) | 21 | 5.6% | | 18 | 5.0% | | 13 | 3.7% | | 17 | 4.8% | |
| BUSINESS & OFFICE | | | | | | | | | | | | |
| Office Systems (AAS) | 24 | 6.3% | Yes | 20 | 5.6% | Yes | 26 | 7.4% | Yes | 23 | 6.4% | Yes |
| Clerical Studies (Cert.) | 0 | 0.0% | | 3 | 0.8% | | 3 | 0.9% | | 2 | 0.6% | |
| Computer Systems (AAS) | 52 | 13.8% | Yes | 57 | 16.0% | Yes | 59 | 16.8% | Yes | 56 | 15.4% | Yes |
| ELECTRONICS | | | | | | | | | | | | |
| Electronics (AAS) | 29 | 7.7% | Yes | 24 | 6.7% | Yes | 23 | 6.6% | Yes | 25 | 7.0% | Yes |
| Electronics (Cert.) | 2 | 0.5% | | 0 | 0.0% | | 1 | 0.3% | | 1 | 0.3% | |
| Health Technology (Cert.) | 1 | 0.3% | N/A | 1 | 0.3% | N/A | 0 | 0.0% | N/A | 1 | 0.2% | N/A |
| MECHANICAL TECHNOLOGY | | | | | | | | | | | | |
| Drafting & Design (AAS) | 16 | 4.2% | No | 14 | 3.9% | No | 13 | 3.7% | No | 14 | 4.0% | No |
| Drafting (Cert.) | 2 | 0.5% | | 0 | 0.0% | | 0 | 0.0% | | 1 | 0.2% | |
| Drafting Design (Diploma) | 2 | 0.5% | | 0 | 0.0% | | 0 | 0.0% | | 1 | 0.2% | |
| Nursing (AAS) | 82 | 21.7% | Yes | 80 | 22.4% | Yes | 79 | 22.5% | Yes | 80 | 22.2% | Yes |
| POLICE SCIENCE | | | | | | | | | | | | |
| Police Science (AAS) | 24 | 6.3% | Yes | 20 | 5.6% | Yes | 26 | 7.4% | Yes | 23 | 6.4% | Yes |
| Law Enforcement (Cert.) | 1 | 0.3% | | 0 | 0.0% | | 1 | 0.3% | | 1 | 0.2% | |
| Respiratory Therapy (AAS) | 8 | 2.1% | No | 14 | 3.9% | No | 12 | 3.4% | No | 11 | 3.1% | No |
| Science Laboratory (AAS) | 2 | 0.5% | No | 1 | 0.3% | No | 0 | 0.0% | No | 2 | 0.4% | No |
| CAREER STUDIES CERTIFICATE | 11 | 2.9% | N/A | 12 | 3.4% | N/A | 5 | 1.4% | N/A | 9 | 2.6% | N/A |
| TOTAL | 378 | 30.2% | | 357 | 29.4% | | 351 | 28.1% | | 363 | 31.1% | |

SOURCE: VCCS Student Enrollment Booklet, Table 160. Percentages are by column except for the final row which is the percentage of occupational/technical FTES among all FTES. SCHEV productivity standards "require that programs have an average of . . . 2.5 times that for graduation" (SCHEV Proposal for Program To Be Initiated in 1992-1994 Biennium, Feb. 9, 1989). Each A.A.S. program, then, requires 18 FTES (7 graduates times 2.5). SCHEV does not set productivity standards for certificates or diplomas.

As can be seen, the 1988-90 three-year average number of FTES enrolled in occupational/technical programs ranged from 1 in 2 discontinued certificate programs (Arts and Crafts and Health Technology) to 110 for the AAS program in Business and

Management. Occupational/technical program FTES account for approximately one-third of all curricular FTES. This is a slightly lower figure than that for headcount, indicating that college transfer students normally carry a slightly heavier course load than occupational/technical students.

Examining only the eight AAS programs, five met SCHEV productivity standards during each of the past three years. These five were Business and Management, Business and Office, Computer Information Systems, Electronics, Nursing, and Police Science. The AAS programs in Mechanical Technology, Respiratory Therapy (to be discontinued in 1991-92), and Science Laboratory Technology (a discontinued program) did not meet the standard during any of the three years.

## STUDENT COMPLETION OF OCCUPATIONAL/TECHNICAL PROGRAMS

Although only about one-third of all curricular students are enrolled in occupational/technical programs, over one-half of all PVCC graduates receive degrees in occupational/technical programs (AAS, certificates, and career studies certificates). For instance, as can be seen in Figure 1, while 35.15% of all curricular students during Fall Semester 1989 were enrolled in occupational/technical programs, 54.39% of all graduates during the 1989-90 academic year were occupational/technical graduates.

In other words, occupational/technical students are much more likely to complete their programs than are college transfer students. The reason for this may be that the goal of college transfer students is to transfer to a four-year, baccalaureate-granting institution and not necessarily to receive an associate degree at PVCC. Many of these

students, in fact, do transfer to four-year colleges or universities before completing their PVCC degree require-

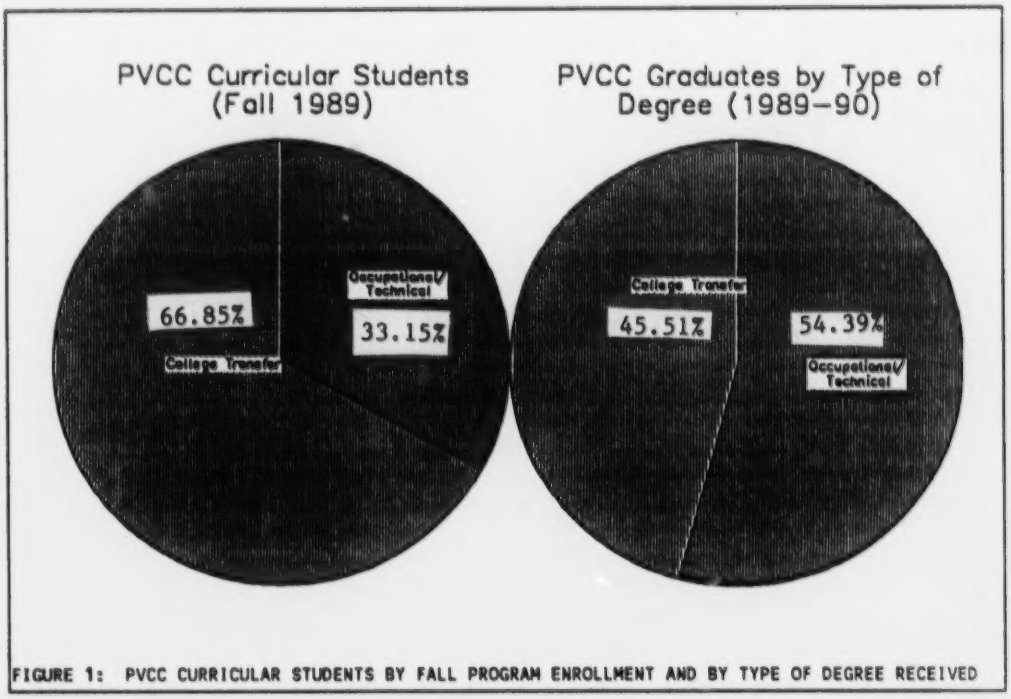


FIGURE 1: PVCC CURRICULAR STUDENTS BY FALL PROGRAM ENROLLMENT AND BY TYPE OF DEGREE RECEIVED

ments. Still, it is important for academic administrators to keep in mind that although fewer students enroll in occupational/technical programs than enroll in college transfer programs, more occupational/technical students graduate.

TABLE 3: NUMBER OF PVCC GRADUATES BY OCCUPATIONAL/TECHNICAL PROGRAM

| ACADEMIC PROGRAM | 1987-1988 No. | 1987-1988 Pct. | 1987-1988 Meets SCHEV Standard | 1988-1989 No. | 1988-1989 Pct. | 1988-1989 Meets SCHEV Standard | 1989-1990 No. | 1989-1990 Pct. | 1989-1990 Meets SCHEV Standard | AVERAGE No. | AVERAGE Pct. | AVERAGE Meets SCHEV Standard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Arts & Crafts (Cert.) | 0 | 0.0% | N/A | 0 | 0.0% | N/A | 0 | 0.0% | N/A | 0 | 0.0% | N/A |
| BUSINESS & MANAGEMENT | | | Yes | | | Yes | | | Yes | | | Yes |
| Accounting (AAS) | 3 | 2.1% | | 6 | 4.8% | | 3 | 2.4% | | 4 | 3.1% | |
| Management (AAS) | 18 | 12.7% | | 15 | 12.0% | | 24 | 19.4% | | 19 | 14.5% | |
| Marketing (AAS) | 5 | 3.5% | | 3 | 2.4% | | 8 | 6.5% | | 5 | 4.1% | |
| BUSINESS & OFFICE | | | | | | | | | | | | |
| Office Systems (AAS) | 7 | 4.9% | Yes | 5 | 4.0% | No | 3 | 2.4% | No | 5 | 3.8% | No |
| Clerical Studies (Cert.) | 3 | 2.1% | | 3 | 2.4% | | 1 | 0.8% | | 2 | 1.8% | |
| Computer Systems (AAS) | 9 | 6.3% | Yes | 3 | 2.4% | No | 10 | 8.1% | Yes | 7 | 5.6% | Yes |
| ELECTRONICS | | | | | | | | | | | | |
| Electronics (AAS) | 7 | 4.9% | Yes | 4 | 3.2% | No | 2 | 1.6% | No | 4 | 3.3% | No |
| Electronics (Cert.) | 1 | 0.7% | | 0 | 0.0% | | 0 | 0.0% | | 0 | 0.3% | |
| Health Technology (Cert.) | 0 | 0.0% | N/A | 0 | 0.0% | N/A | 0 | 0.0% | N/A | 0 | 0.0% | N/A |
| MECHANICAL TECHNOLOGY | | | | | | | | | | | | |
| Drafting & Design (AAS) | 3 | 2.1% | No | 3 | 2.4% | No | 8 | 6.5% | Yes | 5 | 3.6% | No |
| Drafting (Cert.) | 0 | 0.0% | | 0 | 0.0% | | 0 | 0.0% | | 0 | 0.0% | |
| Drafting Design (Diploma) | 0 | 0.0% | | 0 | 0.0% | | 0 | 0.0% | | 0 | 0.0% | |
| Nursing (AAS) | 42 | 29.6% | Yes | 43 | 34.4% | Yes | 35 | 28.2% | Yes | 40 | 30.6% | Yes |
| POLICE SCIENCE | | | | | | | | | | | | |
| Police Science (AAS) | 0 | 0.0% | No | 3 | 2.4% | No | 7 | 5.6% | Yes | 3 | 2.6% | No |
| Law Enforcement (Cert.) | 0 | 0.0% | | 0 | 0.0% | | 1 | 0.8% | | 0 | 0.3% | |
| Respiratory Therapy (AAS) | 3 | 2.1% | No | 4 | 3.2% | No | 9 | 7.3% | Yes | 5 | 4.1% | No |
| Science Laboratory (AAS) | 0 | 0.0% | No | 1 | 0.8% | No | 1 | 0.8% | No | 1 | 0.8% | No |
| CAREER STUDIES CERTIFICATE | 41 | 28.9% | N/A | 32 | 25.6% | N/A | 12 | 9.7% | N/A | 28 | 21.7% | N/A |
| TOTAL | 142 | 61.5% | | 125 | 52.5% | | 124 | 53.7% | | 131 | 55.0% | |

SOURCE: VCCS Graduation Awards Conferred Booklet. Percentages are by column except for the final row which is the percentage of occupational/technical graduates among all graduates. SCHEV productivity standards required that programs have an average of . . . 7 or more A.A.S. degrees . . . annually" (SCHEV Proposal for Program To Be Initiated in 1992-1994 Biennium, Feb. 9, 1989). SCHEV does not set productivity standards for certificates or diplomas.

As noted earlier, SCHEV has set numerical standards not only for FTES enrollment in occupational/technical programs but also for program completion. Each program leading toward an AAS degree should produce an average of seven graduates per year. Table 3 presents PVCC occupational/technical graduates during the past three years and indicates whether the programs met the SCHEV standard during that time.

As can be seen, only 2 of the 8 AAS programs met the SCHEV graduation standards during each of the previous three years. These were Business and Management and Nursing. Another AAS program, Computer Information Systems, met the SCHEV standard for 2 of the 3 previous years.

By far the most productive AAS program was Nursing, producing an average of 40 graduates per year. Next was Business and Management, with an average of 28 graduates per year, and then Computer Information Systems, with 7 graduates. These were the only 3 AAS programs with 3-year averages meeting SCHEV standards.

Unproductive programs, according to SCHEV standards, were Office Systems Technology (5 graduates), Police Science (5 graduates), Respiratory Therapy (5 graduates), Drafting and Design (5 graduates), Electronics (4 graduates), Police Science (3 graduates), and the discontinued program in Science Laboratory Technology (1 graduate).

Certificate programs typically produce one or two graduates per year, and between 12 and 41 career studies certificates are awarded each year. In 1989-90, 1 certificate in Clerical Studies was awarded, one certificate in Administration of Justice (law enforcement) was awarded, and 28 career studies certificates were awarded.

## OCCUPATIONAL GROWTH AND DEMAND

Occupational/technical programs in a community college are provided to meet community needs. Programs designed to provide workers for occupations requiring few workers or having little growth potential may have trouble enrolling students or may produce graduates who have trouble finding jobs, both undesirable outcomes for an educational program. For this reason, occupational/technical programs should be periodically reviewed to ensure they are meeting community needs. This section attempts to provide a limited review of occupational growth and demand with respect to PVCC occupational/technical programs. Career studies certificate programs are not included in this section because they are intended for workers already employed in career fields.

Table 4 presents the occupational growth rate for each *GOV* occupation for which one of PVCC's AAS or certificate programs prepares workers. Occupational growth is expressed as the percentage of change between the years 1988 and 200 and is shown for both SDA 7 and the state of Virginia as a whole.

TABLE 4: OCCUPATIONAL GROWTH BY PVCC OCCUPATIONAL/TECHNICAL PROGRAM

| ACADEMIC PROGRAM | RELATED OCCUPATION | Percent Change 1988 to 2000 SDA 7 | Percent Change 1988 to 2000 Virginia |
|---|---|---|---|
| Arts & Crafts (Cert.) | Artist | 43.3% | 40.8% |
| | Designer | 33.5% | 26.2% |
| | Photographer | 42.1% | 47.9% |
| | Performing Artist | NA | 32.4% |
| BUSINESS & MANAGEMENT | | | |
| Accounting (AAS) | Accountant/Auditor | 29.1% | 28.3% |
| Management (AAS) | Managers (General) | 23.9% | 23.7% |
| | Managers (Personnel) | 24.0% | 29.2% |
| | Sales Workers/Managers | 29.1% | 25.8% |
| | Finance Officers/Managers | 28.0% | 31.3% |
| | Bank Tellers/etc. | 33.4% | 32.1% |
| Marketing (AAS) | Advertising/Public Relations | 27.8% | 32.4% |
| BUSINESS & OFFICE | | | |
| Office Systems (AAS) | Office Supervisors | 19.8% | 22.2% |
| Clerical Studies (Cert.) | Secretaries | 12.9% | 19.7% |
| | General Office Clerks | 17.2% | 21.0% |
| | Bookkeepers | 9.4% | 9.3% |
| | Clerical Worker | 25.0% | 26.2% |
| Computer Systems (AAS) | Programmers and Aides | 43.2% | 53.2% |
| | Computer Operator | 23.4% | 33.1% |
| | Data Entry Operator | -1.1% | 0.3% |
| ELECTRONICS | | | |
| Electronics (AAS) | Electronics Technician | 28.1% | 42.3% |
| Electronics (Cert.) | Electrician | 21.6% | 23.3% |
| Health Technology (Cert.) | Medical Assistant | 57.3% | 63.7% |
| | Nursing/Medical Aide | 48.5% | 51.3% |
| | Radiologic Technologist | 71.2% | 73.6% |
| | Health Record Technologist | 76.1% | 72.5% |
| MECHANICAL TECHNOLOGY | | | |
| Drafting & Design (AAS) | Drafter | 7.3% | 11.4% |
| Drafting (Cert.) | | | |
| Drafting Design (Diploma) | | | |
| Nursing (AAS) | Registered Nurse | 52.6% | 53.2% |
| | Licensed Practical Nurse | 44.3% | 47.8% |
| POLICE SCIENCE | | | |
| Police Science (AAS) | Corrections/Law Enforcement | 33.3% | 29.0% |
| Law Enforcement (Cert.) | Private Guard | 27.9% | 42.7% |
| Respiratory Therapy (AAS) | Respiratory Therapist | 62.0% | 61.3% |
| Science Laboratory (AAS) | Clinical Lab Technician | 21.9% | 28.7% |

SOURCE: Julia H. Martin et al., Guide to Occupations in Virginia, Virginia and Central and Northeast, 8th edition (Charlottesville: Virginia Occupational Information Coordinating Committee, Center for Public Service, March 1991).

Projected growth rates within SDA 7 range from -1.1% for data entry operators to 76.1% for health record technologists and within Virginia from 0.3% for data entry operators to 73.6% for radiologic technologists. Several occupations relating to PVCC occupational/technical programs are among the 25 fastest growing occupations in Virginia. These are radiologic technologist (5th), health records technologist (7th), medical assistant (15th), respiratory therapist (17th), and computer programmer (24th). Several are also among the 25 slowest growing occupations in Virginia. These are stenographer (6th), data entry operator (13th), and typist (15th).

Caution should be exercised when examining these figures. For instance, the low growth rate for drafters is somewhat misleading. As noted in *GOV*, "in Virginia growth should be below average [because] although a large increase is expected in the demand of drafting services, it will be partially offset by the widespread use of computer-aided design equipment which increases the productivity of drafters."[8] PVCC's mechanical technology program, however, is designed to produce CAD system drafters, and these graduates should have an advantage over other drafters trained by conventional means.

Some fields, such as health records technologist, respiratory therapist, and radiologic technologist, have future growth potential but few present job openings. Table 5 presents occupational demand for each *GOV* occupation for which one of PVCC's AAS or certificate programs prepares workers.

Occupational demand is expressed in this table as the average number of annual job openings for both SDA 7 and the state of Virginia. The average annual job openings

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[8]*GOV*, p. 123.

listed in Table 5 are conservative estimates. In this study, average annual job openings are defined as

> . . . the number of openings expected to occur each year in [an] occupation. This includes openings that result from the creation of new jobs or from vacancies left by people leaving the labor force, but it does *not* include openings that result from job turnover. Consequently, the *actual* number of openings occurring each year will be greater than the *projected* average annual openings shown.[9]

[9] *Ibid.*, p. xxxix.

TABLE 5: OCCUPATIONAL DEMAND BY PVCC OCCUPATIONAL/TECHNICAL PROGRAM

| ACADEMIC PROGRAM | RELATED OCCUPATION | Average Annual Job Openings SDA 7 | Average Annual Job Openings Virginia |
|---|---|---|---|
| Arts & Crafts (Cert.) | Commercial Artist | 6 | 155 |
| | Designer | 10 | 319 |
| | Photographer | 2 | 104 |
| | Performing Artist | NA | 78 |
| BUSINESS & MANAGEMENT | | | |
| Accounting (AAS) | Accountant/Auditor | 53 | 1,230 |
| Management (AAS) | Managers (General) | 193 | 5,231 |
| | Managers (Personnel) | 22 | 804 |
| | Sales Workers/Managers | 513 | 13,556 |
| | Finance Officers/Managers | 43 | 1,513 |
| | Bank Teller/etc. | 44 | 1,446 |
| Marketing (AAS) | Advertising/Public Relations | 26 | 772 |
| BUSINESS & OFFICE | | | |
| Office Systems (AAS) | Office Supervisors | 60 | 1,655 |
| Clerical Studies (Cert.) | Secretaries | 147 | 4,125 |
| | General Office Clerks | 219 | 6,155 |
| | Bookkeepers | 86 | 2,414 |
| | Clerical Worker | 208 | 5,753 |
| Computer Systems (AAS) | Programmers and Aides | 28 | 1,463 |
| | Computer Operator | 13 | 447 |
| | Data Entry Operator | 10 | 311 |
| ELECTRONICS | | | |
| Electronics (AAS) | Electronics Technician | 21 | 708 |
| Electronics (Cert.) | Electrician | 45 | 1,145 |
| Health Technology (Cert.) | Medical Assistant | 7 | 260 |
| | Nursing/Medical Aide | 104 | 2,226 |
| | Radiologic Technologist | 12 | 277 |
| | Health Record Technologist | 5 | 96 |
| MECHANICAL TECHNOLOGY | | | |
| Drafting & Design (AAS) | Drafter | 7 | 331 |
| Drafting (Cert.) | | | |
| Drafting Design (Diploma) | | | |
| Nursing (AAS) | Registered Nurse | 121 | 2,580 |
| | Licensed Practical Nurse | 49 | 1124 |
| POLICE SCIENCE | | | |
| Police Science (AAS) | Corrections/Law Enforcement | 47 | 1,212 |
| | Private Guard | 37 | 1,484 |
| Respiratory Therapy (AAS) | Respiratory Therapist | 8 | 92 |
| Science Laboratory (AAS) | Clinical Lab Technician | 11 | 304 |

SOURCE: Julia H. Martin et al., Guide to Occupations in Virginia, Virginia and Central and Northeast, 8th edition (Charlottesville: Virginia Occupational Information Coordinating Committee, Center for Public Service, March 1991).

The average annual job openings within SDA 7 for the occupations listed in Table 5 range from 2 for photographer to 513 for sales workers and sales managers. The programs with the fewest average annual job openings are the certificate program in Arts and Crafts and the AAS programs in Mechanical Technology and Respiratory Therapy. The two programs with the most average annual job openings are the program in Business and Management and the program in Business and Office.

The occupational demand figures presented in Table 5 are only meaningful when placed in context with PVCC occupational/technical program enrollment and completion figures. Table 6 lists both the number of PVCC graduates and the number of PVCC fall term students for each SDA 7 job opening. The lower the number, the higher the demand for PVCC occupational/technical students and graduates. In Arts

TABLE 6: OCCUPATIONAL DEMAND FOR PVCC OCCUPATIONAL/TECHNICAL PROGRAM GRADUATES AND STUDENTS

| ACADEMIC PROGRAM | No. PVCC Graduates for each SDA 7 Job Opening | No. PVCC Students for each SDA 7 Job Opening |
|---|---|---|
| Arts & Crafts (Cert.) | 0.1 | 0.1 |
| BUSINESS & MANAGEMENT | | |
| Accounting (AAS) | 0.6 | 1.3 |
| Management (AAS) | 0.1 | 0.2 |
| Marketing (AAS) | 0.7 | 1.3 |
| BUSINESS & OFFICE | 0.1 | 0.2 |
| Office Systems (AAS) | | |
| Clerical Studies (Cert.) | | |
| Computer Systems (AAS) | 1.1 | 2.3 |
| ELECTRONICS | 0.4 | 0.8 |
| Electronics (AAS) | | |
| Electronics (Cert.) | | |
| Health Technology (Cert.) | 0.0 | 0.0 |
| MECHANICAL TECHNOLOGY | 2.2 | 4.5 |
| Drafting & Design (AAS) | | |
| Drafting (Cert.) | | |
| Drafting Design (Diploma) | | |
| Nursing (AAS) | 0.5 | 0.7 |
| POLICE SCIENCE | 0.3 | 0.5 |
| Police Science (AAS) | | |
| Law Enforcement (Cert.) | | |
| Respiratory Therapy (AAS) | 1.4 | 1.9 |
| Science Laboratory (AAS) | 0.1 | 0.2 |

NOTE: The number of PVCC graduates and students available for each SDA 7 job opening is calculated by dividing the three year average number of graduates or students (see Tables 1-2) by the average annual job openings (see Table 6).

and Crafts, for instance, there are more than ten jobs for each PVCC graduate and fall term student; in Mechanical Technology, however, over two graduates and over four fall term students must compete for each job opening.

There does not seem to be an over supply of PVCC graduates in most occupational/technical programs. In fact, the demand for PVCC graduates in programs such as Business and Office or Police Science appears to be quite high within the PVCC service region. Three exceptions exist. The programs in Mechanical Technology, Computer Information Systems, and Respiratory Therapy produce more graduates and students than there are job openings within SDA 7.

Again, caution should be exercised when examining these figures. Graduate surveys, conversations with faculty, and personal contact with graduates do not necessarily reveal that students earning degrees in these programs have difficulty obtaining jobs.

## CONCLUSIONS

Occupational/technical students typically make up approximately one-third of all curricular students and FTES enrolled at PVCC. Of these occupational/technical students, nearly one-third are enrolled in the Business and Management program. The next largest programs in terms of student enrollment are Nursing and Computer Information Systems. In terms of completion, over one-half of all graduates receive degrees or awards in occupational/technical areas. Occupational/technical students, in other words,

are much more likely to complete their degrees or award programs than are college transfer students.

Measuring AAS programs during a three-year average period against SCHEV productivity standards, three programs--Business and Management, Computer Information Systems, and Nursing--met both FTES enrollment and graduation standards. Three programs--Office Systems Technology, Electronics, and Police Science--met graduation standards but did not meet FTES enrollment standards. Three programs--Drafting and Design, Respiratory Therapy, and Science Laboratory Technology--met neither FTES enrollment nor graduation standards. Of these three, one, Science Laboratory Technology, has already been discontinued, and another, Respiratory Therapy, will be discontinued in 1991-92.

Generally, the growth rates for occupations for which PVCC occupational/technical programs prepare workers are quite high. Similarly, there seem to be ample job opportunities in occupations for which PVCC occupational/technical programs prepare workers.

## RECOMMENDATIONS

One recommendation emerges from this study. As mentioned earlier, even though efforts have been made to ensure that students are correctly coded in the VCCS database with respect to the curriculum in which they are enrolled, these efforts have not resolved the problem.

Perhaps, once a year, early in the fall semester, a list of all students enrolled in all programs should be generated by the Office of Administrative Computing. This list could be used by the dean of instruction, division chairs, and program chairs to insure that students on the list are actually enrolled in various programs and that students enrolled in a program and not appearing on the list are added. Additionally, once a semester, the Office of Administrative Computing could generate a list of students enrolled in discontinued programs. Such a list could be used by the dean of instruction, division chairs, and A&R to correctly code all students listed.

It is important that students be listed correctly in the VCCS student database. In these times of tight budgets and academic accountability, failing to do so could jeopardize the very future of a number of instructional programs at PVCC.



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